

REMARKS

Claims 1 – 8 remain in this application.

Claims 1 – 7 were rejected under 35 U.S.C. 103(a) as being unpatentable over Booher (U.S. Patent No. 4,718,693) in view of Wilson (U.S. Patent No. 5,938,221). Applicant respectfully traverses this rejection.

The present invention provides an air suspension system for a vehicle, the system including a pair of longitudinal leaf spring suspension arms and an anti-roll means *connected rigidly between* said pair of suspension arms. The arrangement is such that, during normal vehicle motion when the leaf spring suspension arms are pivoting (bending) in the same direction and by generally the same amount, no stress is induced in the anti-roll means. Under vehicle roll conditions, however, the leaf spring suspension arms tend to pivot in opposite directions, i.e. the leaf spring suspension arm on an inner side of the vehicle with respect to a (road) curve is caused to pivot downwardly under the weight of the vehicle as it rolls upon its chassis. Under such a roll condition, the tendency of the suspension arms to deflect in opposite directions induces both a torsional stress and an axial stress in the anti-roll means. The torsional stress results from the anti-roll means being caused to twist (i.e. the ends of the anti-roll bar being caused to rotate in opposite directions) in response to the different deflection directions of the suspension arms whereas the axial stress results from the anti-roll means being “stretched” by displacement of the suspension arms away from each other. Thus, by rigidly connecting the anti-roll means between the suspension arms as taught in the present application, the anti-roll means resists the tendency of the suspension arms to deflect in opposite directions during roll. The anti-roll means of the present invention therefore acts to induce a bending moment into the suspension arms due to the stiffness (both torsionally and axially) of said anti-roll means (anti-roll bar) thereby stiffening the suspension arms and hence the whole vehicle suspension system under roll conditions.

In the case of Booher, the rear ends of the leaf springs are *pivotsly connected* to the lower ends of steel shackles and the shackles are *rigidly connected* to the ends of a transverse steel sway bar which is itself journaled in deformable isolation bushings (column 2, lines 52 - 60). The bushings are seated in holes in the arms of respective steel trunnions connected to the vehicle frame and the shackles thus pivot between the arms of their respective trunnions (cf. column 2, lines 60 - 63).

It is the Examiner's contention that the above described complex connection arrangement between the ends of the leaf springs and the sway bar as disclosed in Booher anticipates the feature of the present invention that the *anti-roll means is connected rigidly between the pair of longitudinal leaf spring suspension arms*. In order to arrive at this conclusion, the Examiner alleges that Booher "provides for the arms to act as beams pivotally mounted at their one ends" during normal vehicle motion and "which are *fixed* at those one ends during roll motion of the vehicle." The Examiner proceeds to state that "as the roll motion is incurred, the pivoting of the leaf suspension arm *ceases* and therefore is considered fixed." (Emphasis added).

There is nothing in the disclosure of Booher that suggests that the leaf spring suspension arms cease to pivot (deflect) during vehicle roll conditions. There is no mechanism disclosed in Booher by which such suspension arms would be prevented from deflecting under vehicle roll conditions. It is incomprehensible to the Applicant how it is possible in the system taught by Booher for the suspension arms to pivot together in the same direction under normal vehicle motion and to then cease to deflect at all under vehicle roll conditions. In fact, the claim that the suspension arms cease to pivot under roll conditions is contrary to common experience in this field of endeavor and contrary to the disclosure of Booher. As disclosed at column 2, lines 64 - 66 of Booher, the sway bar is driven by the shackles which are actuated by movement of the composite springs (suspension arms). This is true under both normal vehicle motion where the springs would deflect in the same direction and thus move their respective shackles in the same direction and also under a vehicle roll condition where the springs would deflect in opposite

directions thereby causing their respective shackles to rotate in opposite directions creating (only) a torsional stress in the sway bar.

It is clear from the foregoing that the suspension arms of Booher do pivot (deflect) in opposite directions under vehicle roll conditions but that, because the sway bar is rigidly connected between the shackles and not rigidly connected between the suspension arms as claimed in the present application, oppositely directed deflections of the suspension arms cause only a torsional stress in the sway bar which acts to prevent further rotation of the shackles. As a consequence, the sway bar of Booher can only add a direct force to the pivot pins of the shackles. Because the shackles of Booher are attached to the suspension arms by pivot pins, the sway bar can only transmit direct linear forces to the suspension arms but no bending moment which is otherwise required to change the bending stiffness of the suspension arms. Consequently, the sway bar of Booher cannot add bending stiffness to the suspension arms.

Therefore, Booher does not teach or suggest the present invention. Further, the addition of the airbags of Wilson to the Booher suspension system would not result in the Applicant's suspension system as claimed in claim 1. For these reasons, applicant respectfully requests that the Section 103(a) rejection of claims 1 – 7 based upon Booher in view Wilson be withdrawn.

With respect to the claim language of claim 1 and in regards to the Examiner's "Response to Arguments" in the June 3, 2004 Office Action, Applicant contends that the claim language at the end of claim 1 stating that the "anti-roll means is connected rigidly between the pair of longitudinal leaf spring suspension arms" means that the anti-roll means is rigidly fixed to the spring arms. This is supported by the specification. The specification, on page 10, lines 13 – 16, states that the "anti-roll bar or tube 65 is, in accordance with the invention, connected rigidly *between* the pair of longitudinal leaf spring suspension arms 56, at or adjacent the pivot points (eye bushes) 58 at which the ends 57 of the arms 56 are attached pivotally to the chassis or frame of the associated vehicle." (Emphasis added). In the next paragraph of the specification, at page 10, lines 20 – 22, the

specification states that “the opposed ends of the anti-roll bar or tube 65 are connected rigidly *to* the longitudinal leaf spring suspension arms 56 at or adjacent the respective pivot points 58.” (Emphasis added). Therefore, it is clear from the specification that the claim language “connected rigidly between” means that the anti-roll means is rigidly fixed to the spring arms. This is also substantiated by the drawings, for example Figure 3A. The anti-roll means is shown to be rigidly fixed to the end of the spring arm near the pivot point. Further, Applicant points out that there is no shackle connected to the anti-roll means in the present invention.

If it is the Examiner’s belief that claim 1 as written is not clear or definite enough, Applicant proposes amending claim 1 (at lines 8 – 9) in the following manner: “characterized in that anti-roll means is connected rigidly between to the pair of longitudinal leaf spring suspension arms.” Thus, the claim would read --characterized in that anti-roll means is connected rigidly to the pair of longitudinal leaf spring suspension arms-- instead of “characterized in that anti-roll means is connected rigidly between the pair of longitudinal leaf spring suspension arms.” This amendment would not add new matter as it would merely clarify the meaning of the claims as originally imparted by the specification.

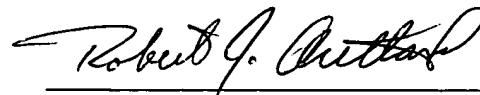
This amendment and request for reconsideration is felt to be fully responsive to the comments and suggestions of the examiner and to present the claims in condition for allowance. Favorable action is requested.

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Respectfully submitted,

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